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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/974,991	10/10/2001	Robert T. Loftus	BOEI-1-1005	8525

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EXAMINER
TORRES, MELANIE

ART UNIT	PAPER NUMBER
3683	

DATE MAILED: 06/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/974,991	Applicant(s) LOFTUS, ROBERT T.
	Examiner Melanie Torres	Art Unit 3683

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 April 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) _____ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☒ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Oath/Declaration

1. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:
It does not identify the citizenship of each inventor.

It does not identify the city and either state or foreign country of residence of each inventor. The residence information may be provided on either on an application data sheet or supplemental oath or declaration.

Specification

2. The amendment filed April 23, 2003 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows:

On page 16 of applicant's amendment with respect to page 5, line 13 applicant adds "It will be appreciated that the coupler bores are positioned so as not to interfere with the insertion of the journals into the bearing assemblies 30b." This addition is considered new matter.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-4, 7, 14 and 17-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Muylaert.

Re claim 1 and 14, Muylaert teaches a rotary aircraft fully articulated hub assembly comprising a hub center body (12) including a plurality of attachment sections (14), configured to receive a plurality of bearing assemblies, positioned about a periphery of the hub center body, a plurality of rotor assemblies (16) configured to receive a pair of bearing assemblies (20a, 20b) and a plurality of bearing assemblies each assembly including an outer housing having an outer surface and an inner surface, the outer surface (28a, 28b) configured to mechanically connect the bearing assembly to the attachment sections of the hub center body, the inner surface being configured to receive a taper conical elastomeric bearing element, the bearing element having an inner race and an outer race (42, 46), an axial pre-load being applied through the inboard bearing element and the outboard bearing element, the respective inner race bearing elements being configured to receive a portion of the rotor assemblies. (Column 3, lines 50-52) However, Muylaert does not teach wherein the bearing element is comprised of a pair of elastomeric bearing elements. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have made the single elastomeric bearing element into two components, since it has been

held that forming into two pieces an article which has formerly been one piece involves only routine skill in the art and is an obvious engineering choice. (See In re Larson et. al., 144 USPQ 347, Howard v. Detroit Stove Woks, 150 U.S. 164)

Re claim 2, Muylaert teaches a plurality of flange sections (28a, 28b) extending from the outer housing.

Re claim 3, Muylaert teaches an elastomeric element (20a) within the inboard bearing element.

Re claim 4, Muylaert teaches an elastomeric element (20 b) within the outboard bearing element.

Re claim 7, Muylaert teaches wherein the inner race of the inboard bearing and the inner race of the outboard bearing are configured to receive a journal (38). (Column 3, lines 7-16)

Re claim 17, Muylaert teaches wherein the inner race (42) of one bearing element (28a) frictionally engages the inner race (28b) of the other bearing element.

Re claim 18, Muylaert teaches closed end plates formed by the respective inner races of the inboard bearing element and the outboard bearing element. (Figure 5)

Re claim 19, Muylaert teaches a plurality of bearing coupler lugs (not shown but disclosed as through holes 30a and 30b) connecting the inboard bearing element and the outboard bearing element within the outer housing.

Re claim 20, Muylaert teaches a tie bar attachment lug (40) centrally disposed through the closed end plates connecting the bearing assembly to the rotor assembly.

5. Claims 8 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muylaert as applied to claims 1 and 14 above.

Re claims 8 and 15, Muylaert does not teach wherein the axial pre-load is about 8,500 to 15,000 pounds. It would have been a matter of design choice to have chosen the appropriate axial pre-load depending on the designer's choice since applicant has not disclosed wherein this specific preload solves any stated problem or is for any particular purpose and it appears that a variety of pre-loads would perfprm equally well. The pre-load amount is a predetermined quantity that would be determined based upon the amount nececessary to avoid damage to the main rotor assembly.

6. Claims 5, 6, 9-13 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muylaert as applied to claims 1 and 14 above in view of Hibyan.

Re claim 9, Muylaert discloses a rotary aircraft opposed tapered conical elastomeric flap bearing assembly comprising an outer housing defining a first and a

second section, the outer housing having an outer surface configured to attach a hub center body and an inner surface configured to receive a set of opposed taper conical bearing elements, a tapered conical inboard bearing element having an outer race and an inner race, the closed end plate defining a plurality of bores therethrough (best seen in Fig 5 at 40), a tapered conical outboard bearing element having an outer race and an inner race, the outer race being bonded to the inner surface of the outer housing and the inner race being frictionally engaged with the extended portion of the inner race of the inboard bearing element, the inner race of the outboard bearing element forming an outer plate defining a plurality of bores therethrough, wherein an axial pre-load is applied to the inboard bearing element and the outboard bearing element and at least one bearing coupler lug connecting the bearing elements. However, Muylaert does not teach wherein an outer surface of the outboard bearing element is bonded to an inner surface of the outer housing. Hibyan teaches bonding bearing elements in a bearing assembly. It would have been obvious to have bonded the outer surface of the outboard bearing to an inner surface of the outer housing so as to provide greater strength to the overall assembly.

Re claims 5, 6 and 16, Muylaert does not teach wherein an outer race of the each bearing element is bonded to an inner surface of the outer housing. Hibyan teaches bonding bearing elements in a bearing assembly. It would have been obvious to have bonded the outer race of the bearings to an inner surface of the outer housing so as to provide greater strength to the overall assembly.

Re claim 11, Muylaert as modified teaches wherein the plurality of bores defined through the respective inner races includes at least one of an axial bore, a bearing coupler bore and a dowel bore. (See 40 on Fig. 5)

Re claim 12, Muylaert as modified teaches an elastomeric element (20a) within the inboard bearing element.

Re claim 13, Muylaert as modified teaches an elastomeric element (20b) within the outboard bearing element.

Re claim 10, Muylaert as modified does not teach wherein the axial pre-load is about 8,500 to 15,000 pounds. It would have been a matter of design choice to have chosen the appropriate axial pre-load depending on the designer's choice since applicant has not disclosed wherein these specific preloads solve any stated problem or is for any particular purpose and it appears that the assembly would perform equally well with a range of pre-loads. The pre-load amount is a predetermined quantity that would be determined based upon the amount nececessary to avoid damage to the main rotor assembly.

Response to Arguments

7. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melanie Torres whose telephone number is (703)305-0293. The examiner can normally be reached on Monday-Friday, 6:30 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Lavinder can be reached on (703)308-3421. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-2571 for regular communications and (703)308-2571 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-1113.

MT
June 2, 2003

Melanie Torres

MELANIE TORRES
PATENT EXAMINER

6-2-03